

WHAT IS CLAIMED IS:

1. A solvent composition for selective removal of COS from a gas stream containing same, said composition comprising

a) at least one polyalkylene glycol alkyl ether of the formula



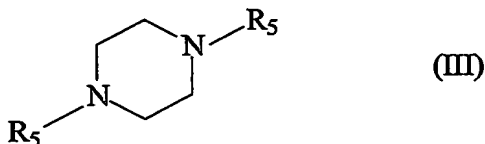
wherein R_1 is an alkyl group having from 1 to 6 carbon atoms; R_2 is hydrogen or an alkyl group having from 1 to 4 carbon atoms; Alk is an alkylene group, branched or unbranched, having from 2 to 4 carbon atoms, and n is from 1 to 10; and

b) at least one alkanolamine compound of the formula



or

at least one piperazine compound of formula



wherein R_3 is hydrogen, an alkyl group having from 1 to 6 carbon atoms, or the R_4OH group; R_4 is a branched or unbranched alkylene group having from 1 to 6 carbon atoms; R_5 , independently in each occurrence, is hydrogen or an hydroxyalkyl group having from 1 to 4 carbon atoms; and R_6 is hydrogen, an alkyl group having from 1 to 6 carbon atoms or an hydroxyalkyl group having from 1 to 4 carbon atoms.

2. The solvent composition according to Claim 1 wherein the polyalkylene glycol alkyl ether of the formula I is a mixture of polyalkylene glycol alkyl ethers comprising dimethyl ethers of polyethylene glycols of formula $CH_3O(C_2H_4O)_nCH_3$ wherein n is from 1 to 10.

3. The solvent composition according to Claim 2 wherein the mixture of polyalkylene glycol alkyl ethers comprises from 0 to 0.5 wt percent of diethylene glycol dimethyl ether, from 5 to 7 wt percent of triethylene glycol dimethyl ether, from 16 to 18 wt percent tetraethylene glycol dimethyl ether, from 23 to 25 wt percent of pentethylene glycol dimethyl ether, from 22 to 24 wt percent of hexaethylene glycol dimethyl ether, from 15 to 17 wt percent of heptaethylene glycol dimethyl ether, from 8 to 10 wt percent of octaethylene glycol dimethyl ether, from 3 to 5 wt percent of nonaethylene glycol dimethyl ether, and from 1 to 2 wt percent of decaethylene glycol dimethyl ether.
4. The solvent composition according to any one of Claims 1 to 3 wherein the component b) is an alkanolamine of formula II in which substituent R_3 is hydrogen.
5. The solvent composition according to any one of Claims 1 to 3 wherein the component b) is monoethanolamine.
6. The solvent composition according to any one of Claims 1 to 3 wherein the component b) is an alkanolamine of formula II in which substituent R_3 is an alkyl group having from 1 to 6 carbon atoms or the R_4OH group.
7. The solvent composition according to Claims 6 wherein the alkanolamine of formula II is selected from the group consisting of diethanolamine, methylethanolamine and diisopropanolamine.
8. The solvent composition according to any one of Claims 1 to 3 wherein the component b) is piperazine.
9. The solvent composition according to any one of Claims 1 to 3 wherein the component b) is hydroxyethylpiperazine.
10. A process for selective removal of COS from a gas stream containing COS and CO_2 , said process comprising contacting the gas stream with a solvent composition comprising
- a) at least one polyalkylene glycol alkyl ether of the formula



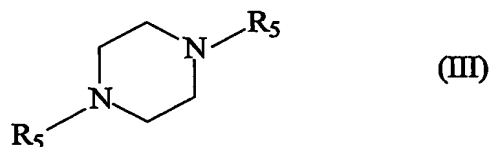
wherein R_1 is an alkyl group having from 1 to 6 carbon atoms; R_2 is hydrogen or an alkyl group having from 1 to 4 carbon atoms; Alk is an alkylene group, branched or unbranched, having from 2 to 4 carbon atoms; and n is from 1 to 10; and

b) at least one alkanolamine compound of the formula



or

at least one piperazine compound of formula



wherein R_3 is hydrogen, an alkyl group having from 1 to 6 carbon atoms, or the R_4OH group; R_4 is a branched or unbranched alkylene group having from 1 to 6 carbon atoms; R_5 , independently in each occurrence, is hydrogen or an hydroxyalkyl group having from 1 to 4 carbon atoms; and R_6 is hydrogen, an alkyl group having from 1 to 6 carbon atoms or an hydroxyalkyl group having from 1 to 4 carbon atoms.

11. The process according to Claim 10 for selective removal of COS from a gas stream comprising contacting the gas stream with the solvent composition as claimed in Claim 2.

12. The process according to Claim 10 for selective removal of COS from a gas stream comprising contacting the gas stream with the solvent composition as claimed in Claim 3.

13. The process according to Claim 10 for selective removal of COS from a gas stream comprising contacting the gas stream with the solvent composition as claimed in Claim 4.

14. The process according to Claim 10 for selective removal of COS from a gas stream comprising contacting the gas stream with the solvent composition as claimed in Claim 5.

15. The process according to Claim 10 for selective removal of COS from a gas stream comprising contacting the gas stream with the solvent composition as claimed in Claim 6.

16. The process according to Claim 10 for selective removal of COS from a gas stream comprising contacting the gas stream with the solvent composition as claimed in Claim 7.

17. The process according to Claim 10 for selective removal of COS from a gas stream comprising contacting the gas stream with the solvent composition as claimed in Claim 8.

18. The process according to Claim 10 for selective removal of COS from a gas stream comprising contacting the gas stream with the solvent composition as claimed in Claim 9.

19. A solvent composition for selective removal of COS from a gas stream containing same, said composition comprising

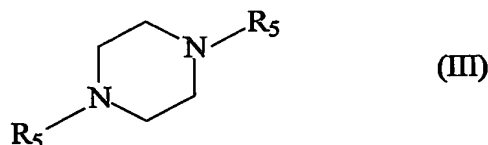
a) 1,3-dimethyl-3,4,5,6-tetrahydro-2(1H)-pyrimidinone; and

b) at least one alkanolamine compound of the formula



or

at least one piperazine compound of formula



wherein R_3 is hydrogen, an alkyl group having from 1 to 6 carbon atoms, or the R_4OH group; R_4 is a branched or unbranched alkylene group having from 1 to 6 carbon atoms; R_5 , independently in each occurrence, is hydrogen or an hydroxyalkyl group having from 1 to 4 carbon atoms; and R_6 is hydrogen, an alkyl group having from 1 to 6 carbon atoms or an hydroxyalkyl group having from 1 to 4 carbon atoms.

20. A process for selective removal of COS from a gas stream containing COS and CO_2 , said process comprising contacting the gas stream with a solvent composition comprising

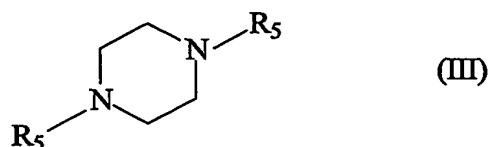
a) 1,3-dimethyl-3,4,5,6-tetrahydro-2(1H)-pyrimidinone; and

b) at least one alkanolamine compound of the formula



5 or

at least one piperazine compound of formula



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wherein R_3 is hydrogen, an alkyl group having from 1 to 6 carbon atoms, or the R_4OH group; R_4 is a branched or unbranched alkylene group having from 1 to 6 carbon atoms; R_5 , independently in each occurrence, is hydrogen or an hydroxyalkyl group having from 1 to 4 carbon atoms; and R_6 is hydrogen, an

15 alkyl group having from 1 to 6 carbon atoms or an hydroxyalkyl group having from 1 to 4 carbon atoms.

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21. A solvent composition for removal of COS from a gas stream containing same, said composition comprising

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b) a mixture of N-formylmorpholine and N-acetylmorpholine; and

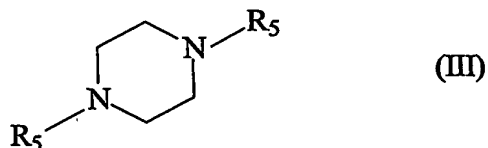
b) at least one alkanolamine compound of the formula

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or

at least one piperazine compound of formula



wherein R_3 is hydrogen, an alkyl group having from 1 to 6 carbon atoms, or the R_4OH group; R_4 is a branched or unbranched alkylene group having from 1 to 6 carbon atoms; R_5 , independently in each occurrence, is hydrogen or an hydroxyalkyl group having from 1 to 4 carbon atoms; and R_6 is hydrogen, an alkyl group having from 1 to 6 carbon atoms or an hydroxyalkyl group having from 1 to 4 carbon atoms.

22. A process for selective removal of COS from a gas stream containing same, said process comprising treating the gas stream with a solvent composition comprising

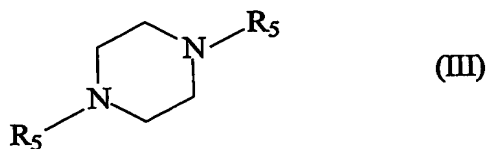
a) a mixture of N-formylmorpholine and N-acetylmorpholine; and

b) at least one alkanolamine compound of the formula



or

at least one piperazine compound of formula



wherein R_3 is hydrogen, an alkyl group having from 1 to 6 carbon atoms, or the R_4OH group; R_4 is a branched or unbranched alkylene group having from 1 to 6 carbon atoms; R_5 , independently in each occurrence, is hydrogen or an hydroxyalkyl group having from 1 to 4 carbon atoms; and R_6 is hydrogen, an alkyl group having from 1 to 6 carbon atoms or an hydroxyalkyl group having from 1 to 4 carbon atoms.